Using RFID Technology to Manage and Automate Your Records

Presented by Gene Hickok

AHIMA 2005

Discussion Topics

- What is Radio Frequency Identification?
- Why RFID and not Barcode?
- How does it work?
- Business processes and workflow.
- How does RFID automate processes?
- What role does RFID play in managing records.
- How will RFID affect the “Bottom Line”?
  - Who are the stakeholders?
  - What is the value proposition?

Why Fort Hood?

Largest Army Post (200 sq. miles)

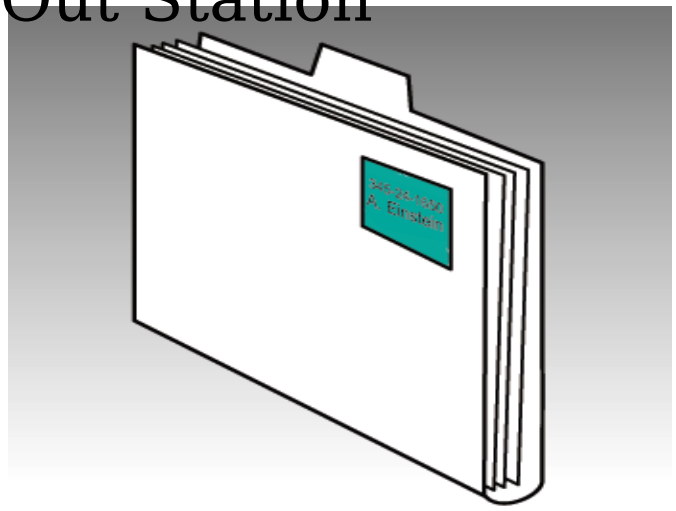
- One hospital with many specialty care clinics, 7 remote clinics, and 27 battalion aid stations
- 185,000 active files
- Approx. 76,000 visits per month
- They actively support records management activity and understand its importance
- Home for testing many digital initiatives within the DoD

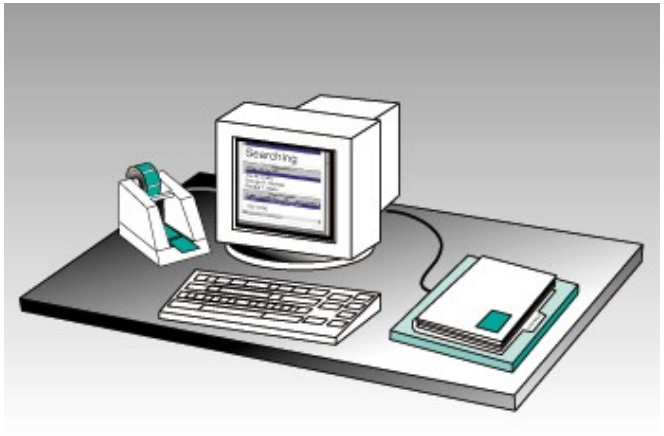
Current Problem

- 54-59% of Active Duty Records are unaccounted
- 21% of Family Records are unaccounted
- On average, 25% of the records holdings are temporary
- Litigation pending is in excess of $200M
- Approx. 40K troops move on/off the post continuously for: permanent change of station, training, deployment, and re-deployment

COMPONENTS

Concept 1. Smart Files and Check-In / Check-Out Station

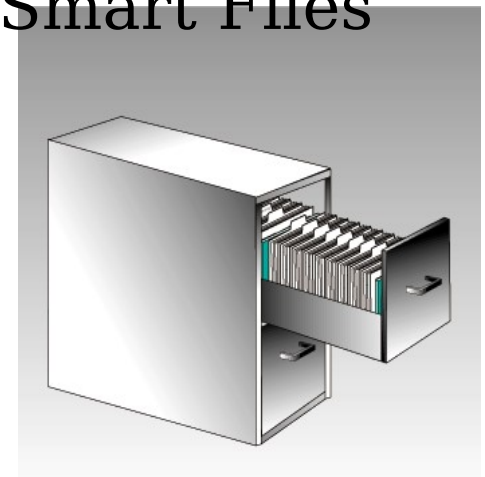


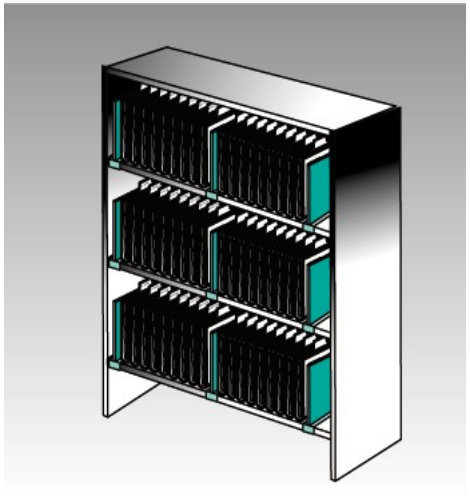


- ***Smart Labels*** attached to medical record folder creates Smart File
- Labels feature ***internal readable and writable memory***
- ***CFT Software*** creates database for organizing and searching files
- ***CFT Hardware*** is a network of linked components, which enable tracking of file location

COMPONENTS

Concept 2. Filing Drawers and Cabinets for Smart Files





- CFT hardware installed in existing filing drawers or shelving units creates ***Smart Cabinets***

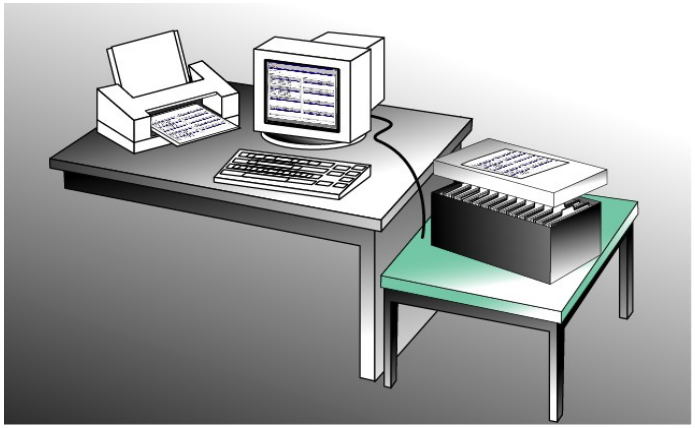
- Linkage to ***Smart Files*** and CFT File Tracking System software

COMPONENTS

Concept 3. Smart Chart and Smart Record Holders

- ***Record Holders*** with CFT tracking hardware read folders and link them to update database

Concept 4. File Tracking System Box Reader



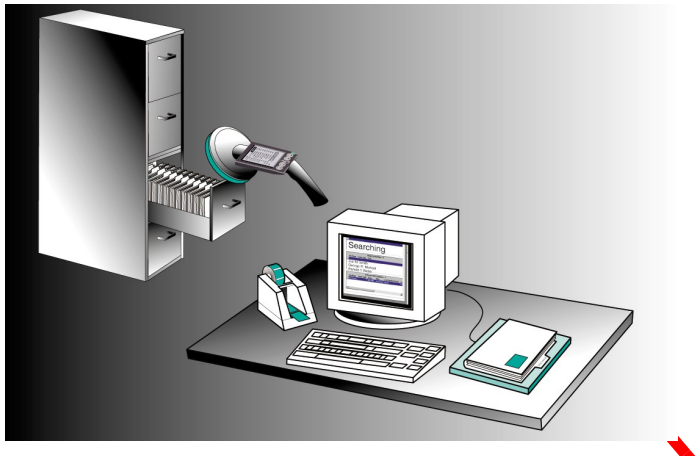
Features

- Automatically records and documents box contents
- Electronically searches for items in boxes

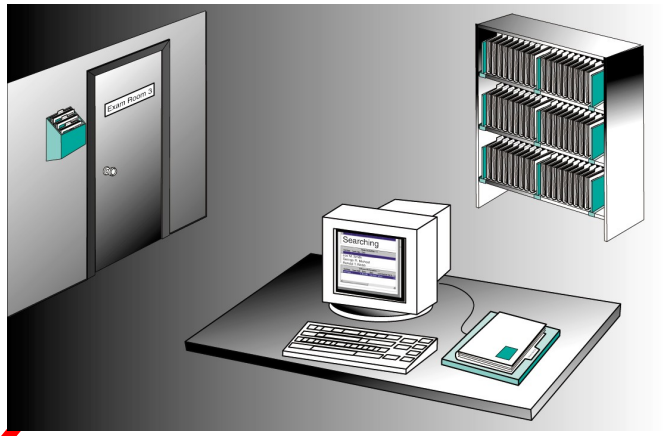
Uses

- Courier shipments between locations
- Archive management
- Battlefield record management
- Bulk check-in/check-out

The Fort Hood Environment

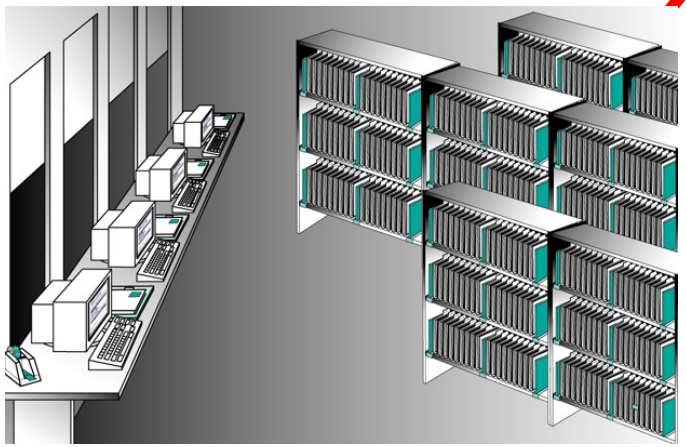


Battalion Aid

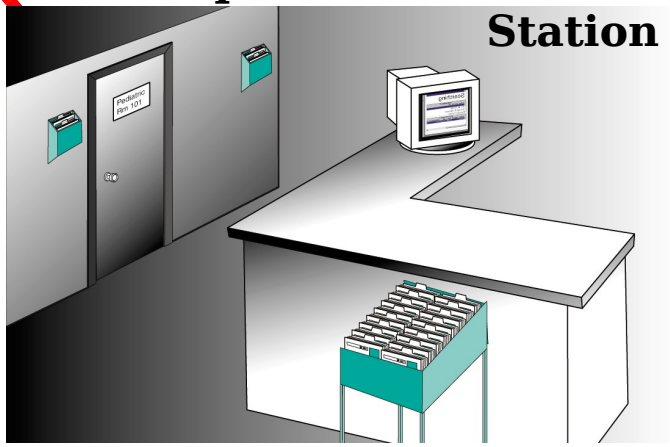


Out Patient Clinic

Medical Records



Hospital Ward Nurses' Station



Why RFID and not Barcode?

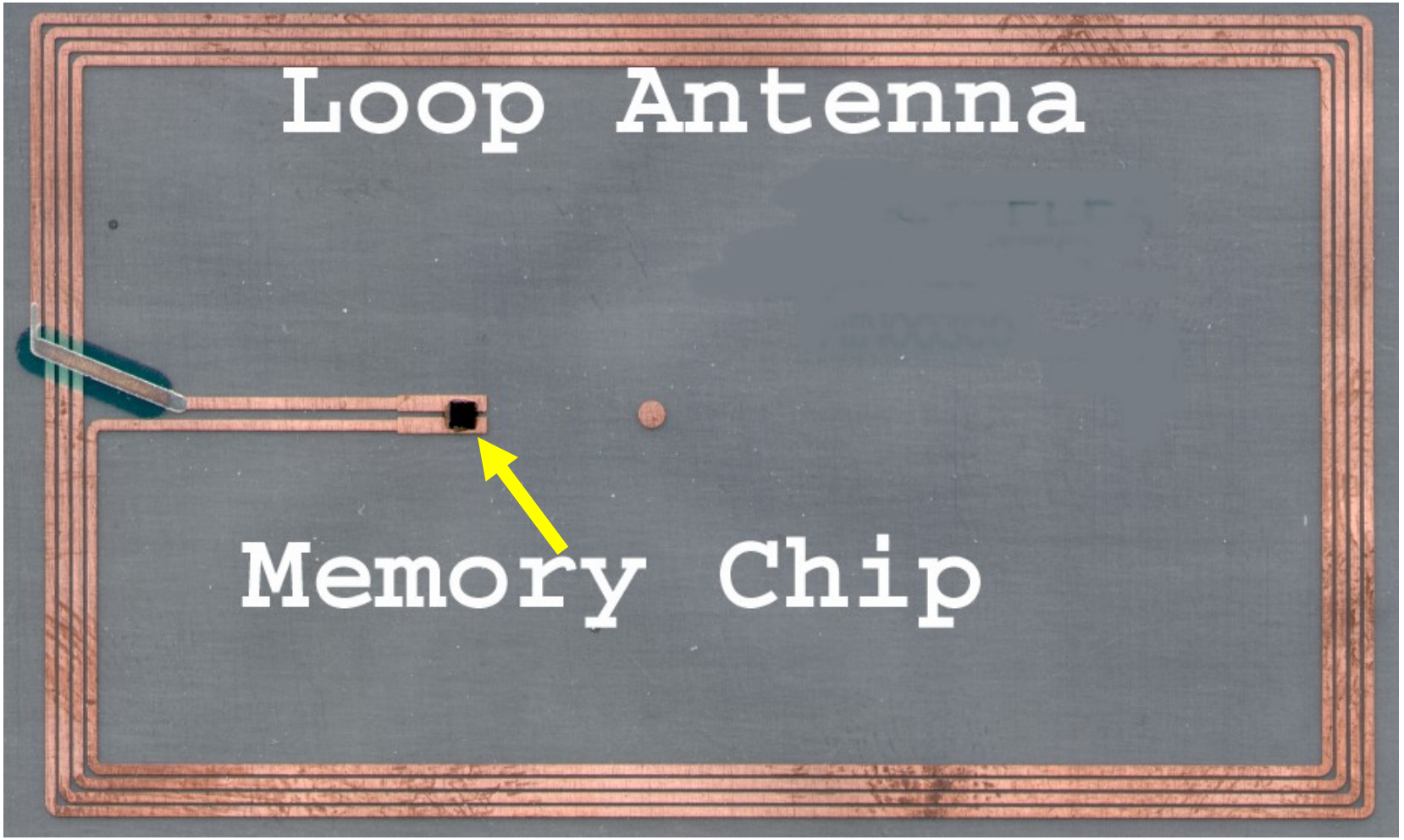
RFID

- No line of site required
- Significantly less human involvement
- Multiple files can be checked in/out simultaneously
- Bulk custody can be accomplished by simply placing files on the shelf.

Barcode

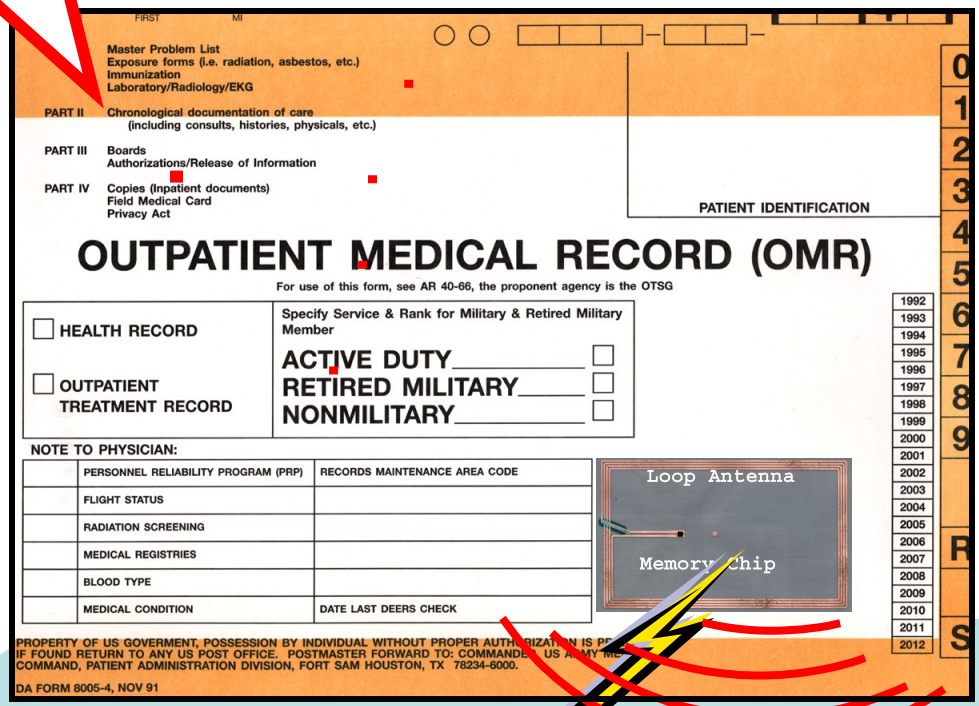
- Line of site required
- Human must handle and scan each file
- Multiple scans may be required to accomplish the scan
- Files must be scanned one at a time
- Custody can be accepted only by manually scanning each file

What is Radio Frequency Identification?



How Does RFID Technically Work?

Continuous and Automatic Tracking



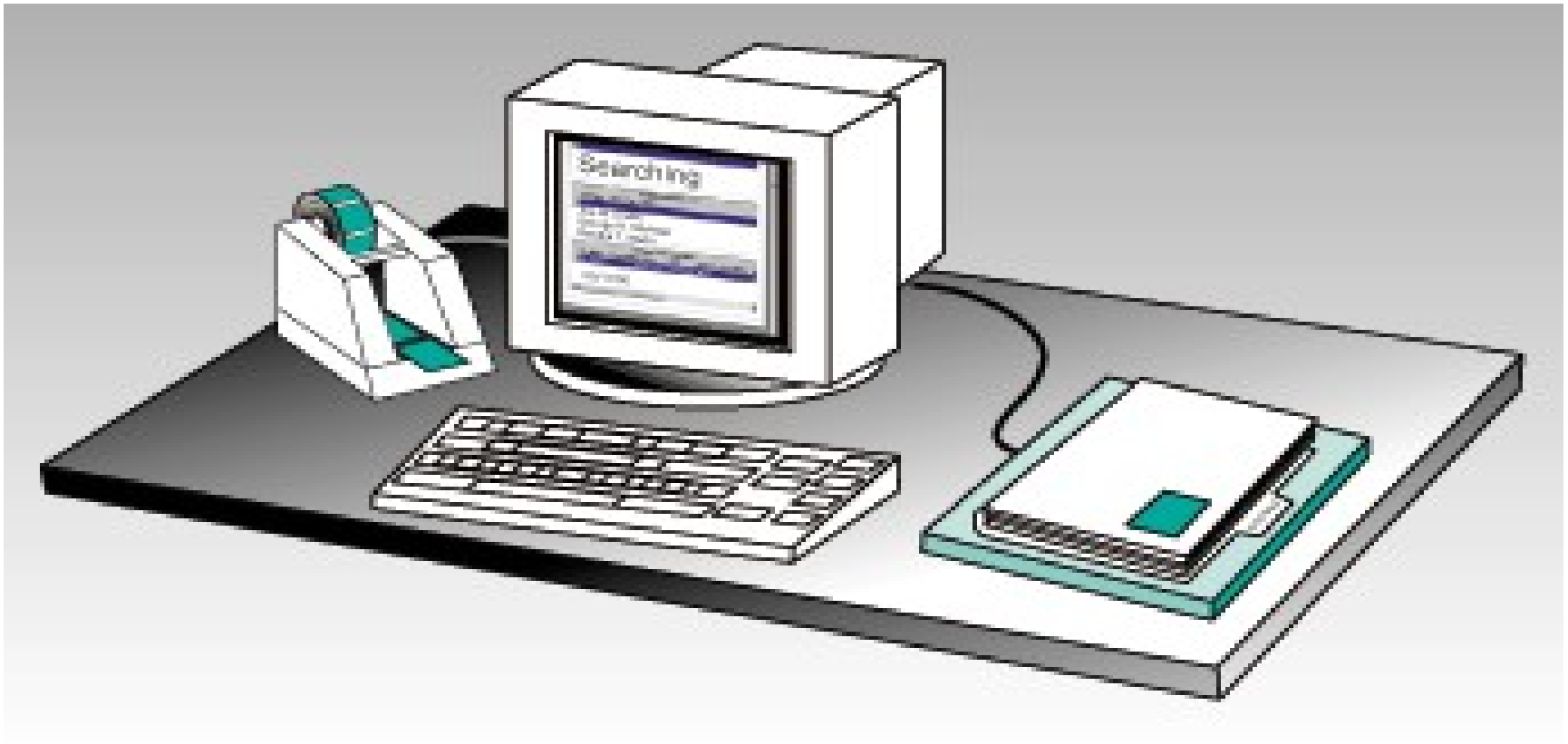
1. A tagged folder is placed on a Smart Shelf antenna.

2. The antenna sends a signal to the tag.

3. The tag responds back to the antenna with a unique ID and location.

Shelf Antenna

How Does RFID Technically Work?



The Check-in/Check-out pad reads the RFID tag in the same manner as the Smart Shelf.

Records Room Retro-fit

Mini Smart Shelf

How Does RFID File Tracking Functionally Work?

Find Folders (Clerks)

- Where is the folder? Where has it been?
- Find from a list (deployment, appointments)

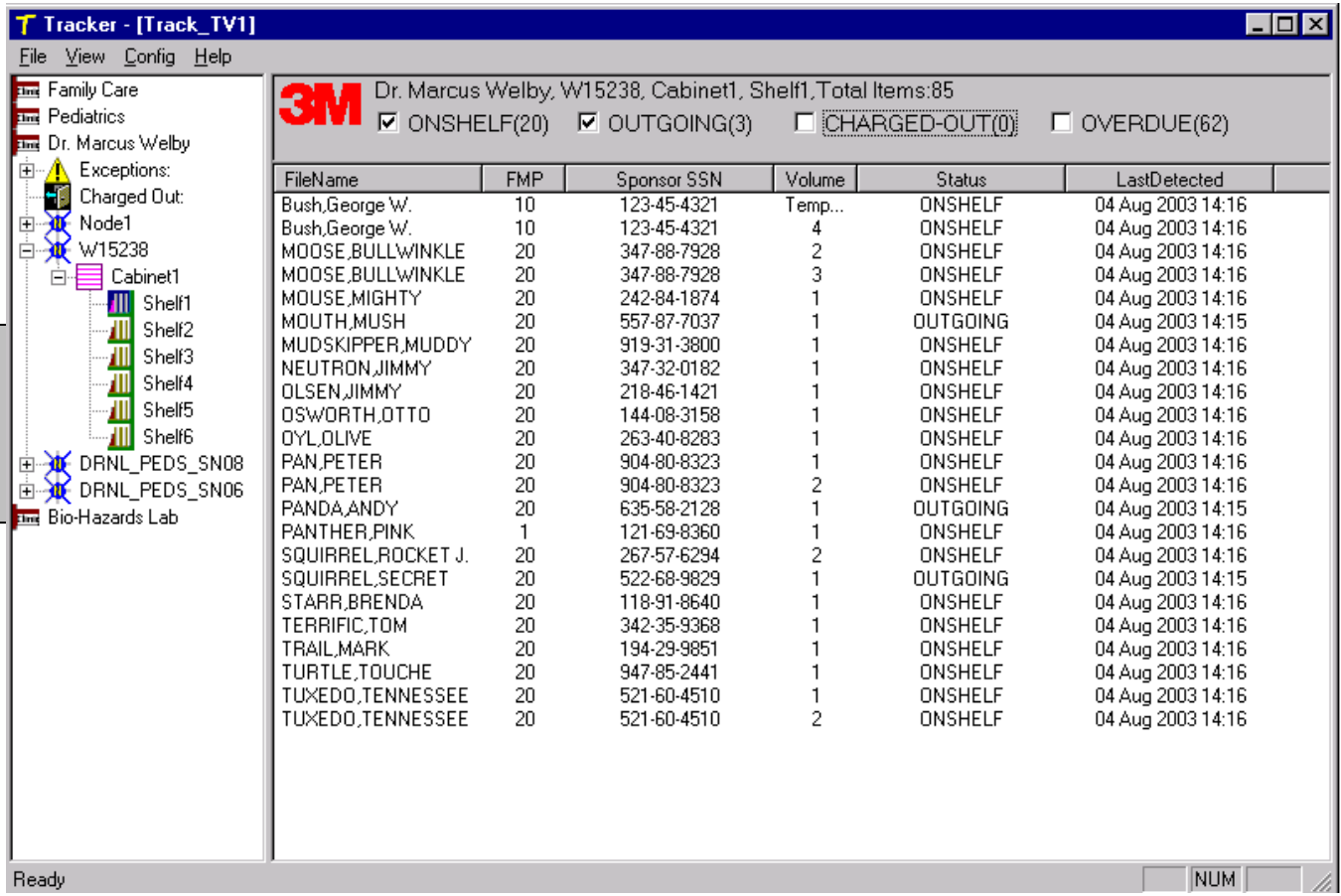
Tracker (Administration, Clerks, Tech Service)

- System Monitoring and Administration
- Complete inventory reporting
- Overdue for Return reporting
- Merging Enforcement/Notification

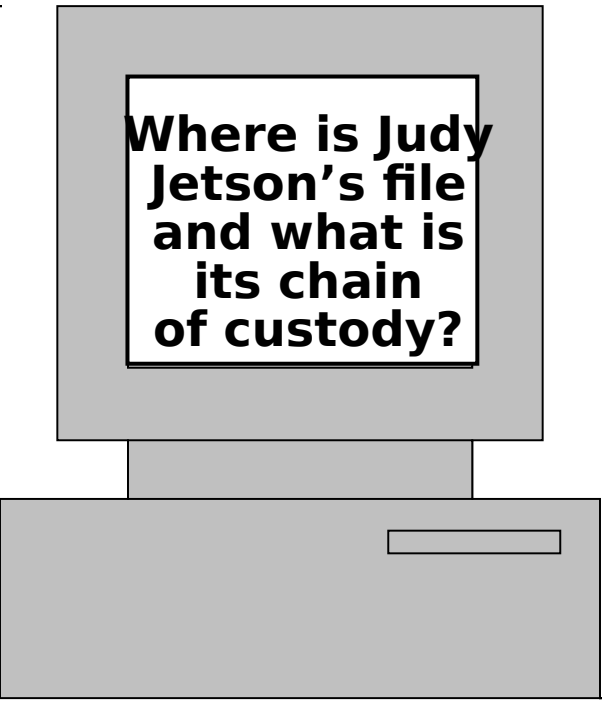
File Maintenance System (Clerks)

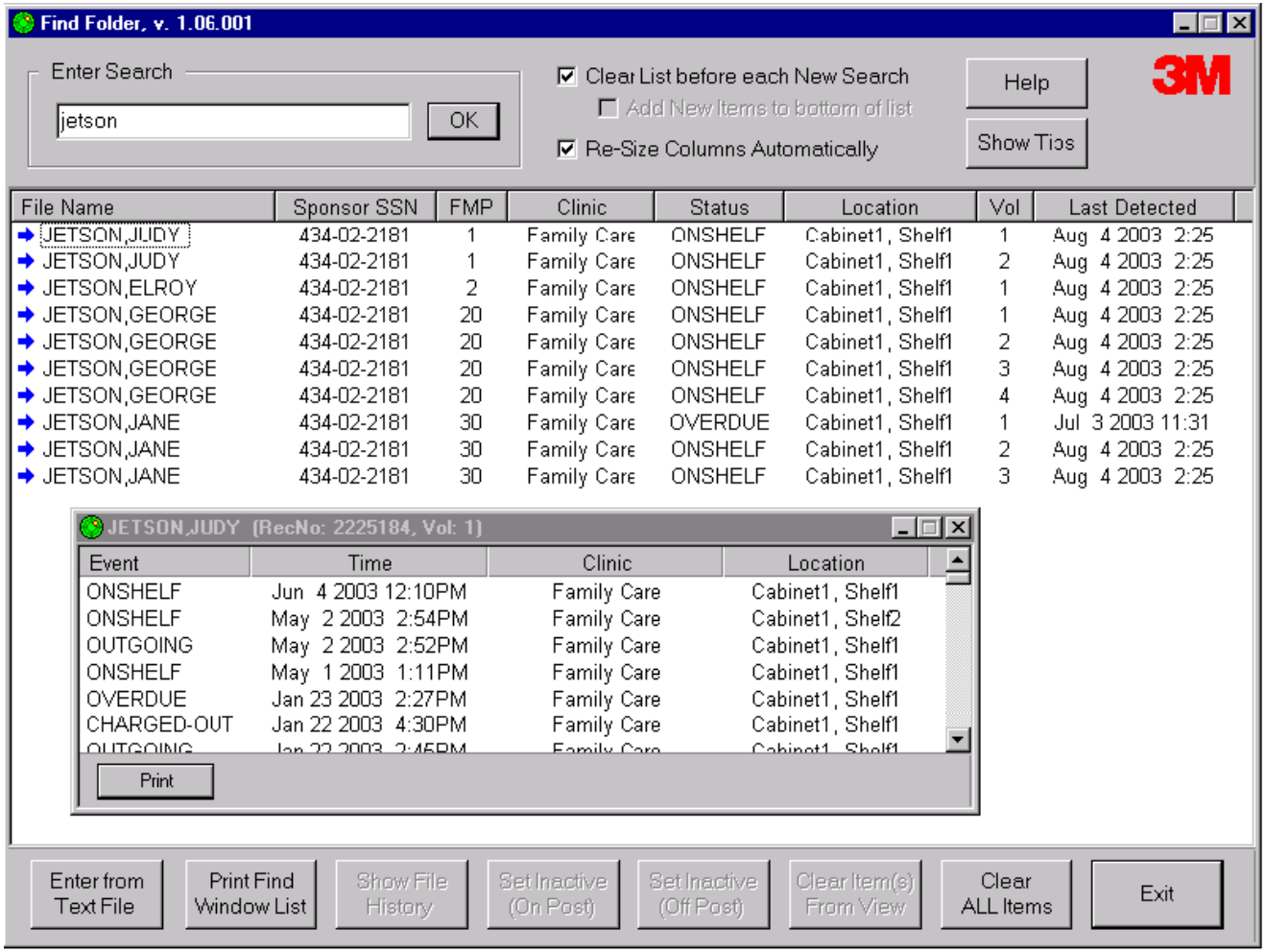
- Create, edit, delete, and retire records
- Temporary file management (recycled temp records)

How Does RFID Functionally Work?

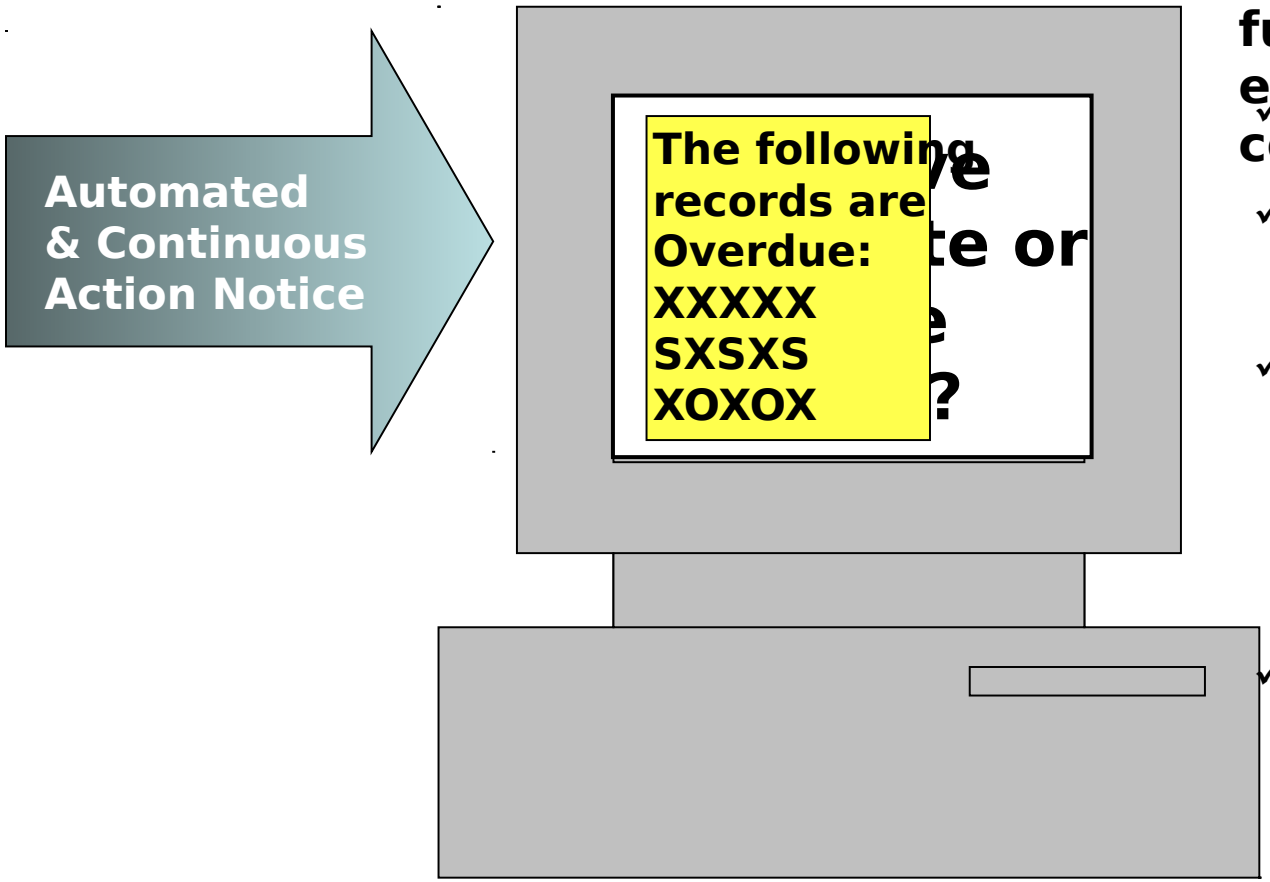

Tracker - [Track_TV1]
File View Config Help
Family Care
Pediatrics
Dr. Marcus Welby
Exceptions:
Charged Out:
Node1
W15238
Cabinet1
Shelf1
Shelf2
Shelf3
Shelf4
Shelf5
Shelf6
DRNL_PEDS_SN08
DRNL_PEDS_SN06
Bio-Hazards Lab
3M
Dr. Marcus Welby, W15238, Cabinet1, Shelf1,Total Items:85
ONSHELF(20)
OUTGOING(3)
CHARGED-OUT(0)
OVERDUE(62)
FileName FMP Sponsor SSN Volume Status LastDetected
Bush,George W. 10 123-45-4321 Temp... ONSHELF 04 Aug 2003 14:16
Bush,George W. 10 123-45-4321 4 ONSHELF 04 Aug 2003 14:16
MOOSE,BULLWINKLE 20 347-88-7928 2 ONSHELF 04 Aug 2003 14:16
MOOSE,BULLWINKLE 20 347-88-7928 3 ONSHELF 04 Aug 2003 14:16
MOUSE,MIGHTY 20 242-84-1874 1 ONSHELF 04 Aug 2003 14:16
MOUTH,MUSH 20 557-87-7037 1 OUTGOING 04 Aug 2003 14:15
MUDSKIPPER,MUDDY 20 919-31-3800 1 ONSHELF 04 Aug 2003 14:16
NEUTRON,JIMMY 20 347-32-0182 1 ONSHELF 04 Aug 2003 14:16
OLSEN,JIMMY 20 218-46-1421 1 ONSHELF 04 Aug 2003 14:16
OSWORTH,OTTO 20 144-08-3158 1 ONSHELF 04 Aug 2003 14:16
OYL,OLIVE 20 263-40-8283 1 ONSHELF 04 Aug 2003 14:16
PAN,PETER 20 904-80-8323 1 ONSHELF 04 Aug 2003 14:16
PAN,PETER 20 904-80-8323 2 ONSHELF 04 Aug 2003 14:16
PANDA,ANDY 20 635-58-2128 1 OUTGOING 04 Aug 2003 14:15
PANTHER,PINK 1 121-69-8360 1 ONSHELF 04 Aug 2003 14:16
SQUIRREL,ROCKET J. 20 267-57-6294 2 ONSHELF 04 Aug 2003 14:16
SQUIRREL,SECRET 20 522-68-9829 1 OUTGOING 04 Aug 2003 14:15
STARR,BRENDA 20 118-91-8640 1 ONSHELF 04 Aug 2003 14:16
TERRIFIC,TOM 20 342-35-9368 1 ONSHELF 04 Aug 2003 14:16
TRAIL,MARK 20 194-29-9851 1 ONSHELF 04 Aug 2003 14:16
TURTLE,TOUCHE 20 947-85-2441 1 ONSHELF 04 Aug 2003 14:16
TUXEDO,TENNESSEE 20 521-60-4510 1 ONSHELF 04 Aug 2003 14:16
TUXEDO,TENNESSEE 20 521-60-4510 2 ONSHELF 04 Aug 2003 14:16
Ready
NUM

How Does RFID Functionally Work?




Find Folder, v. 1.06.001
Enter Search
jetson
OK
Clear List before each New Search
Add New Items to bottom of list
Re-Size Columns Automatically
Help
Show Tips
3M
File Name | Sponsor SSN | FMP | Clinic | Status | Location | Vol | Last Detected
JETSON,JUDY | 434-02-2181 | 1 | Family Care | ONSHELF | Cabinet1, Shelf1 | 1 | Aug 4 2003 2:25
JETSON,JUDY | 434-02-2181 | 1 | Family Care | ONSHELF | Cabinet1, Shelf1 | 2 | Aug 4 2003 2:25
JETSON,ELROY | 434-02-2181 | 2 | Family Care | ONSHELF | Cabinet1, Shelf1 | 1 | Aug 4 2003 2:25
JETSON,GEORGE | 434-02-2181 | 20 | Family Care | ONSHELF | Cabinet1, Shelf1 | 1 | Aug 4 2003 2:25
JETSON,GEORGE | 434-02-2181 | 20 | Family Care | ONSHELF | Cabinet1, Shelf1 | 2 | Aug 4 2003 2:25
JETSON,GEORGE | 434-02-2181 | 20 | Family Care | ONSHELF | Cabinet1, Shelf1 | 3 | Aug 4 2003 2:25
JETSON,GEORGE | 434-02-2181 | 20 | Family Care | ONSHELF | Cabinet1, Shelf1 | 4 | Aug 4 2003 2:25
JETSON,JANE | 434-02-2181 | 30 | Family Care | OVERDUE | Cabinet1, Shelf1 | 1 | Jul 3 2003 11:31
JETSON,JANE | 434-02-2181 | 30 | Family Care | ONSHELF | Cabinet1, Shelf1 | 2 | Aug 4 2003 2:25
JETSON,JANE | 434-02-2181 | 30 | Family Care | ONSHELF | Cabinet1, Shelf1 | 3 | Aug 4 2003 2:25
JETSON,JUDY (RecNo: 2225184, Vol: 1)
Event | Time | Clinic | Location
ONSHELF | Jun 4 2003 12:10PM | Family Care | Cabinet1, Shelf1
ONSHELF | May 2 2003 2:54PM | Family Care | Cabinet1, Shelf2
OUTGOING | May 2 2003 2:52PM | Family Care | Cabinet1, Shelf1
ONSHELF | May 1 2003 1:11PM | Family Care | Cabinet1, Shelf1
OVERDUE | Jan 23 2003 2:27PM | Family Care | Cabinet1, Shelf1
CHARGED-OUT | Jan 22 2003 4:30PM | Family Care | Cabinet1, Shelf1
Print
Enter from Text File
Print Find Window List
Show File History
Set Inactive (On Post)
Set Inactive (Off Post)
Clear Item(s) From View
Clear ALL Items
Exit

How Does RFID Automate Our Process?



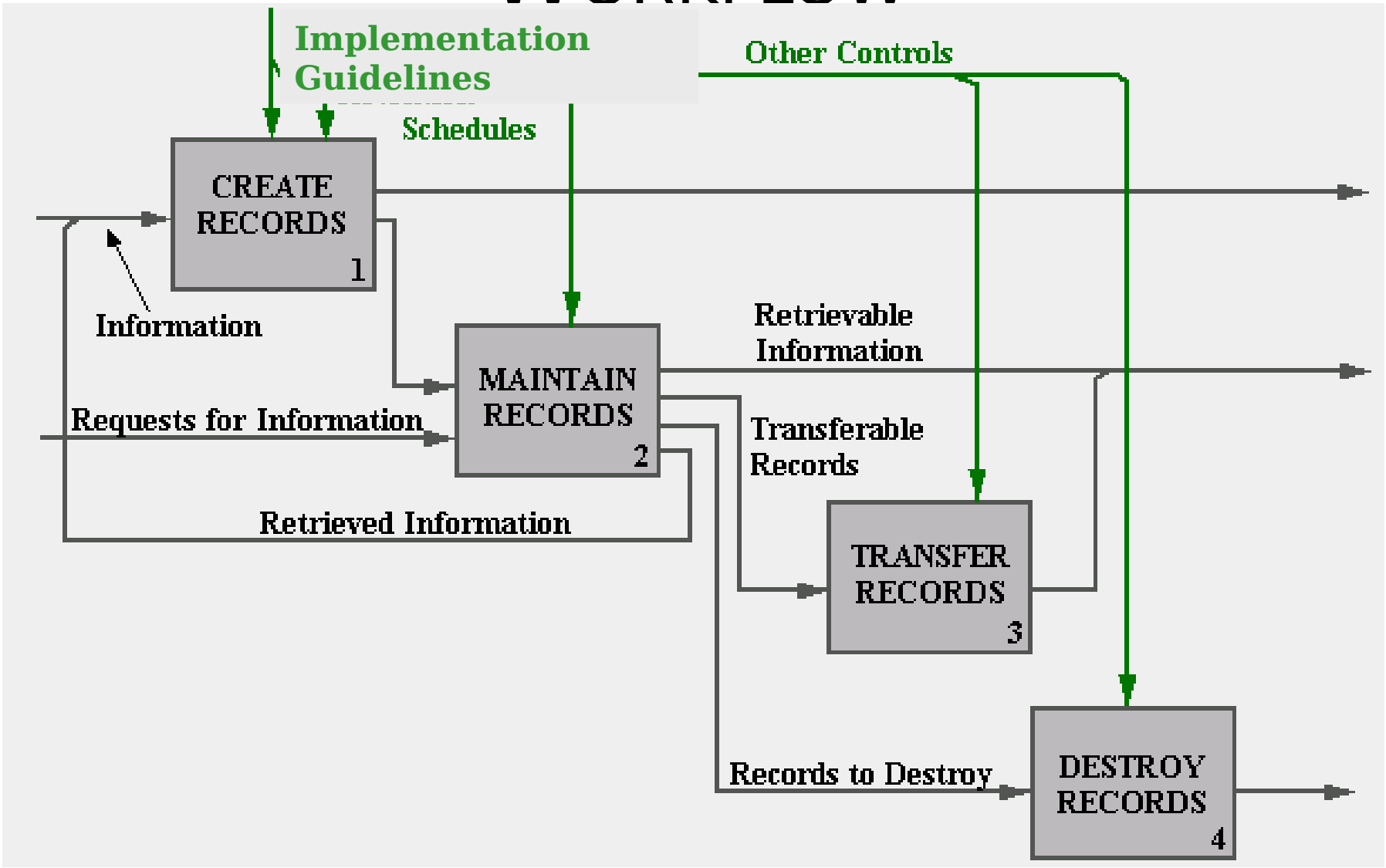
This same functionality exists for many conditions:

- ✓**Duplicate files**
- ✓**Temp and permanent files**
- ✓**Existing files detected when trying to create a new record**
- ✓**The following records are due for retirement**

Business Processes & Workflow

- **Observe and document your workflow and business processes.**
- **Understand the needs of all the stakeholders in the records management process.**
- **Determine and validate consequences when the process fails to produce the record.**
- **Determine technology insertion points.**
- **Document and validate your value proposition.**

Business Processes & Workflow



How will RFID and Smart Shelves Affect the "BOTTOM LINE"?

- **Who are the stakeholders?**
  - Soldiers and their family members
  - Records managers
  - Physicians and nurses
  - Chief of Staff
  - Judge Advocate General's Office
  - Third party billing office
  - Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

How will RFID and Smart Shelves Affect the "BOTTOM LINE"?

What is the Value Proposition?

Costs Incurred by Missing Records	***AS IS***
Provider Time – Data Collection	**$1,465,000**
Repeat Testing	**$1,150,000**
Medical Malpractice tied to Missing Records	**$1,000,000**
Troop Movement Costs	**$ 680,000**
Search and Retrieval Costs	**$300,000**

Annual Missing Record Total Cost **. $4,595,000**

Next Steps

- Tag ~175K Medical records
- Decide on commercial standard tags vs. specialty RFID tags (currently problematic)
- Decide to design and build the reader vs. purchasing commercially available readers.

Scoping the Solution

- Darnall Record Room
  - ~65K records, 770 shelves
- Monroe Clinic
  - 13K records, 147 shelves
- Bennett Clinic
  - 24K records, 287 shelves
- TMC -12
  - 5K records, 56 shelves
- Moore Clinic
  - 49K records, 581 shelves
- Numerous Doctor’s Offices – Mini-Shelf